

20th Nov.
1866.

AN ESSAY
ON THE INFLUENCE UPON HEALTH

OF

ALCOHOLIC DRINKS,

AS AN ARTICLE OF DIET;

INCLUDING THE CONSIDERATION WHETHER ANY QUANTITY, OF ANY
KIND, BE NECESSARY FOR THE MAINTENANCE OF HEALTH
IN THOSE ENGAGED IN LABORIOUS OCCUPATIONS.

TO WHICH WAS ADJUDGED THE
PRIZE OFFERED BY THE REV. J. A. JAMES,

TO

THE STUDENTS OF
THE ROYAL SCHOOL OF MEDICINE AND SURGERY, BIRMINGHAM.

BY EDWARD TURNER, STUDENT.

"SUUM CUIQUE."

BIRMINGHAM: J. C. BARLOW, BENNETT'S HILL,
BOOKSELLER TO THE ROYAL SCHOOL OF MEDICINE.

M.DCCC.XXXVII.



TO THE

REVEREND JOHN ANGEL JAMES

THIS ESSAY IS INSCRIBED,

WITH FEELINGS OF GREAT DIFFIDENCE AND RESPECT,

BY

HIS OBLIGED SERVANT,

THE AUTHOR.

AN
ESSAY ON THE INFLUENCE UPON HEALTH
OF
ALCOHOLIC DRINKS.

THESIS.

"ON THE INFLUENCE UPON HEALTH OF ALCOHOLIC DRINKS, AS AN ARTICLE OF DIET; INCLUDING THE CONSIDERATION WHETHER ANY QUANTITY, OF ANY KIND, BE NECESSARY FOR THE MAINTENANCE OF HEALTH IN THOSE WHO ARE ENGAGED IN LABORIOUS OCCUPATIONS."

THE common fluid with which Nature has so bountifully supplied us, and which, not less than food, is absolutely necessary to life, is, undoubtedly, water; but man has furnished himself with others, in which he indulges. Whether these are in any ways hurtful or useful to his constitution, will be the subject of the present Essay. In the first place, I shall briefly enter into the history of spirits in general; the different kinds of them; the composition, chemical and physical properties of spirits, wines, malt liquors, &c.; and the dangers arising from the adulteration of these. I shall next speak of the physiological and general effects which they exert upon the body generally, and upon its component parts; their aggravation of particular diseases; their effects on the skin, eyes, stomach, liver,

kidneys, bladder, brain, and blood. I shall likewise touch upon the *Psora ebriorum* of Dr. Darwin, dyspepsia, diabetes, delirium tremens, insanity, apoplexy, epilepsy, its effects on posterity, and that dreadful finish of a life of drunkenness—spontaneous human combustion. I shall conclude with a deduction from these, including the consideration whether any quantity, of any kind, be necessary for persons engaged in laborious occupations.

In entering briefly upon their history it will be quite sufficient to say that their use and abuse have been known and handed down to us from hoar antiquity ; and if the records of the antediluvian era were more complete we should probably find that they were not unknown to the remotest ages of the world. Wherever the grape flourished, inebriation seems to have prevailed. The formation of wine from this fruit was among the earliest discoveries of man ; and the bad consequences thence resulting seem to have been almost co-eval with the discovery. Those regions whose uncongenial climate indisposed them to yield the vine gave birth to other products, which served as substitutes. The cases of Noah and Lot, recorded in the sacred writings, are the earliest of which tradition or history has left any record ; but the middle ages seem to have indulged in excesses of this kind much more than the ancients. The ruin of Rome was owing to luxury, of which indulgence in wine was the principal ingredient. Hannibal's army fell less by the arms of Scipio than by the wines of Capua ; and the inebriated hero of Macedon, after slaying his friend Clytus and burning the palace of Persepolis, expired in a fit of intoxication, in his thirty-third year. It does not certainly appear to have been considered a very culpable sort of indulgence, even by some of the sages of antiquity. Plato cautions against allowing wine to youth before eighteen years, and against becoming intoxicated before forty ; but after this age he considered some degree of indulgence in this way pardonable : Socrates, too, was partly of the same opinion.* The wines of Sorech and Lebanon, and many others, are celebrated in holy writ ; and the fragrance of the wine of Hebron is made a type of God's blessing upon Israel. Wine, likewise, does not seem to have been the only liquor known to antiquity. Tacitus men-

* Hoc quoque virtute quondam certamine magnum
Socratem palmam promuisse fuerunt."

Horace states that even Cato the Censor often warmed his virtues by wine :—

“ Narratur et prisci Catonis
Sepe mero caluisse virtus.”

tions ale, or beer, as common to the Germans in his time ; by the Egyptians it was employed as a substitute for wine.* Ale was common in the middle ages, and was the favourite drink of our Saxon ancestors. Even the use of ardent spirits, which is generally supposed to be a modern discovery, existed from a very early period. Alcohol was known to the chymists as early as the middle of the twelfth century. Arrack has been manufactured in the island of Java from time immemorial. Brandy appears to have been known to Galen, who recommends it for the cure of voracious appetite ;† and its distillation was common in Sicily six hundred years ago. This seems to have been generally the case, that spirits, &c., were, in the first place, used entirely as medicines. Geneva, or Hollands, was sold at first as a diuretic in the apothecaries' shops ; but the people became so fond of it that it soon entered into general use. In 1248 we find brandy, likewise, sold in the same manner, as a cordial. The varieties of wine are so numerous as almost to defy calculation : Mr. Brande enumerates forty-four different kinds, and there are others which have escaped his observation. Ardent spirits are fewer in number, and may be mostly comprised under the heads of gin, rum, brandy, and whiskey. Alcohol is the principle of intoxication in all liquors ; it is this which gives to wine, ale, and spirits, their properties. In its natural state, however, it is so pungent that it could not be received into

* “Potui humor ex hordeo aut frumento in quandam similitudinem vini corruptus.”—*Germania Taciti*, cap. 23, de potus et cibus. Of this liquor—beer or ale—Pliny speaks in the following passage : “Sunt et in vino prodigia. Dicitur in Arcadia fieri, quod foecunditatem foeminis importet, viris rabiem. At in Achaia maxime circa Caryniam abigi partum vino, atque etiam si uvam edant gravidæ, cum differentia in gustatu non sit. Trozenium vinum qui bibunt, negantur generare. Thasos duo genera vini diversa facere proditur : unum quo somnus concilietur, alterum vero quo fugetur. Apud eosdem vitis theriace vocatur, cuius et vinum et uva contra serpentium ictus medetur. Libanios thuris odore, ex qua Diis prolibant. E diverso aspendios, damnata aris. Ferunt eam nec ab alite ulla attingi. Thasium uvam Ægyptus vocat apud se prædulcem, quæ solvit alvum. Est contra in Lycia, quæ solutam firmat. Ægyptus et echolada habet, abortus facientem. Vina in apothecis Canis ortu mutantur quedam, posteaque restituuntur sibi. Sic et mari navigatio, cuius jactatus his, quæ duraverint, tantum vetustatis adjicere sentitur, quantum habuerint.”—Pliny, xiv., 22.

† When we have reason to ascribe it to a morbid state of stomach in respect of tone or secretion, purgatives, and especially those that are warm and bitter, may be found successful. Stimulating stomachics have been found equally so ; whence Galen very judiciously recommends frequent and small doses of brandy, and Riverius of ambergris, &c.—Mason Good's *Study of Medicine*.

the stomach, even in a moderate quantity, without producing death. It can, therefore, only be used in dilution ; and in this state we have it, from the strongest ardent spirits to simple small beer. The first (ardent spirits), being the most concentrated of its combinations, act most readily upon the constitution. They are more inflammatory, and intoxicate sooner than the others ; swallowed in an over-dose, they act almost instantaneously, extinguishing the senses, and overcoming the whole body with a sudden stupor. Alcohol is the characteristic ingredient of all wines ; but daily experience convinces us that the same quantity of alcohol applied to the stomach under the state of natural wine, and in a state of mixture with water, will produce very different effects upon the system, and to an extent which it is difficult to comprehend. It must necessarily exist, then, in wine, in a far different condition from that in which we know it in a separate state ; but then this is only the case with *pure* wine. But it is essential to state that the stronger wines of Spain, Portugal, and Sicily, are rendered marketable by the addition of brandy, and must, consequently, contain *uncombined* alcohol. "It is well known," observes Dr. Macculloch, "that diseases of the liver are the most common and the most formidable of those produced by the use of ardent spirits ; it is equally certain that no such disorders follow the even intemperate use of *pure* wine, however long indulged in. To the concealed and unwitting consumption of spirit, therefore, contained in the wines commonly drunk in this country, is to be attributed the excessive prevalence of those hepatic affections which are comparatively little known to our continental neighbours. Thus much is certain, that their ordinary wines contain no alcohol but what is disarmed of its virulence by the prophylactic energies of combination." Beck, in his excellent work on Medical Jurisprudence, gives the following true, yet alarming, account of the effects of alcohol. "On the effects of this *poison*," says he, "taken as it ordinarily is by persons in the habit of intoxication, it is not necessary for me to enlarge. I have only to refer to the effect of it in a pure state and in large doses ; and then, by comparing these results with the table published by Mr. Brande of the quantity of alcohol contained in various kinds of liquors, an idea may be formed of the injury produced, and, indeed, danger to which life is so freely exposed. Brodic injected proof spirits into the stomach of a rabbit. In five minutes he lay motionless and insensible ; the pupils of the eyes were dilated, there were slight convulsive motions of the extremities, the respiration was laborious, and he finally died, at the end of an hour and fifteen minutes. In his fur-

ther experiments he found the stomach highly inflamed by the injection of this poison, but never observed any preternatural appearance in the brain. The symptoms, however, produced by spirits, he observed, are very analogous to those caused by injuries of the brain. By examining Brande's table, we find that the quantity of pure spirit contained in a cent measure of Scotch whiskey is fifty-four, more than half; so that a very little of this would produce the same effect on man as the alcohol did on the rabbit."

Brandy contains fifty-three per cent. of pure spirit; but it is more destructive to the constitution than either rum or gin: it takes more rapidly to the head, and more readily than the others tinges the face to a crimson or livid hue. Rum is probably the next in point of fatality, and after that whiskey and gin. The superior diuretic qualities of the two latter may possibly account for such differences; but *pure* gin is decidedly more wholesome than any of the others: it contains about fifty-one and a half per cent. of pure spirit.

Having premised thus much of spirits generally, I come now to speak of their effect on the origin and aggravation of diseases. The number of persons who die annually in consequence of disease brought on by a too free indulgence in spirits is much greater than unprofessional men imagine; their effects are not discovered until after *continued* observation. A fresh observer is surprised, indeed, at the many disorders to which men of all classes of the community are subject, but is very far from ascribing them to that cause. This fact, however, is well known to medical men, who are aware that very many of the cases they are called on to attend originate from alcoholic drinks, although very often the circumstance is unknown either to the patient or his friends. This is particularly the case with regard to affections of the liver, stomach, and other viscera concerned in digestion. Dr. Willan is of opinion that considerably more than one-eighth of all the deaths which take place in persons above twenty years old happen prematurely through excess in drinking spirits. If threescore and ten years be the number allotted to man—and we find that the average range of his existence is little more than half that number—there must surely be a *something* to abridge so tremendously the span of life. The following diseases, brought on by the free indulgence in inebriating liquors of all kinds, are enumerated in Dr. Copland's *Dictionary of Practical Medicine*. “Drunkenness, in its various phases, from the daily indulgence in more vinous or spirituous fluids than is required, but short of affecting the nervous system in a very evident manner, up to that degree of excess by which

the senses and intellect become obscured or are entirely lost, predisposes to many diseases, and directly causes others; slighter excesses in the use of fermented liquors, particularly wine and malt liquors, occasion plethora, with all its consequences, especially gout, apoplexy, paralysis, and congestion of the abdominal viscera. Greater excesses and the too free use of spirits exhaust nervous and vital power, inducing tremors, nervousness, delirium tremens, encephalitis, paralysis, and insanity; affections of the digestive organs, particularly anorexia and dyspepsia, diarrhoea and dysentery; inflammation and structural changes of the biliary organs; and produce disorder of the sexual functions, even sterility and impotency; and ultimately lesion of the kidneys, and dropsies: but these effects differ essentially according to the kind that is drunk. Thus, ale and porter, in consequence of the nutritive matter and, perhaps, invigorating bitter they contain, and the small proportion of alcohol, dispose to a plethora which is not unfrequently terminated by apoplexy. Spirits, on the contrary, induce severe dyspepsia, obstructed and hardened livers, dropsy, and more than half of all our chronic disorders." But it is not till they have been indulged in for some time that they produce these results, but they frequently bring on a state of system which, although not a perceptible disease, is still very much like it. It is that state of body and mind intermediate between that of sickness and health, much nearer the former than the latter, but to which it is impossible to give a satisfactory name. It is, indeed, a kind of erythiasm, viz., a state of irritation or excitement short of the inflammatory or strictly febrile condition, although often passing into it from causes which, in a healthy state of the system, would not produce this effect. One of the most consequent attendants on the use of spirits is weakness; they certainly give a momentary impulse to the circulation and system, but how soon does this subside! By the impression on the nervous system, not only is the nervous power stagnated, but the sanguineous system is alike affected. To effect the contraction of a muscle, it is well known that it should both be well supplied with arterial blood, and that a stream of nervous fluid should penetrate through its tissue; but if the nervous fluid is stagnated, and, consequently, the sanguineous circulation diminished in force and frequency, it is impossible for them to act with any degree of tone. The following narrative from a man who deservedly stands high in the estimation of his country will, I think, practically establish this point: it is from Captain Back's narrative. "It is difficult to persuade men, even though they should not be habitual drinkers of spi-

rits, that the use of these liquors is debilitating, instead of the reverse. The immediate stimulus gives a temporary courage, and its effect is mistaken for an infusion of new strength; but the slightest attention will show how exactly the result is the reverse. It is sufficient to give men under hard and steady labour a draught of the usual grog, or a dram, to perceive that, often in a few minutes, they become languid, or, as they generally term it, faint; losing their strength in reality, while they attribute that to the continuance of fatiguing exertions. He who will make the corresponding experiments on two equal boats' crews, rowing in a heavy sea, will soon be convinced that the water-drinkers will far outdo the others." But this debilitating effect may be carried so far as even to endanger life itself.

"It is inconceivable," says Richerand, "that the muscular irritability may be so far impaired by the use of spirituous liquors that the heart and diaphragm might lose the power of contraction, which would bring on complete asphyxia. Emaciation is peculiarly characteristic of the spirit drinker. All drunkards, if they live long enough, become emaciated; the fat is absorbed from every part. The whole body gets lank and debilitated, and there is a want of due warmth. The occurrence of emaciation is not at all to be wondered at, for spirits, besides being possessed of no nutritive properties, dull the sensibility of the stomach by their narcotic effects; and, thus cutting off that supply of nervous influence which is so essentially necessary to digestion, chymification of the food is prevented, the quality deteriorated, and the quantity of chyle diminished. The principles of nutrition being thus affected, it is not to be wondered at that emaciation should take place. But it is produced in a much greater degree by the increased energy of the arterial system, if this is too great, which it undoubtedly is. What is the consequence? The system gets rid of more matter than it otherwise would, and becomes thin and languid.

Corpulence, not less a disease than the foregoing, is generally caused by malt liquors, principally by the nutritious matter they contain. The pimples on the face and general fulness, in persons accustomed to drinking, arises from accumulation in the system; but these symptoms arise more generally when a person who has been accustomed to this habit forsakes it. The secering system, which was before sufficiently stimulated by what was taken to carry off all superfluous humours, this stimulant being taken away, the excretaries grow torpid, and accumulations take place in the various viscera, and indeed the whole body; for the excretaries are more apt to become

torpid, having been so long used to the stimulant effect produced by potations, that this being taken away, they have scarcely power to carry on their particular functions. But this will occur with persons who are still in the habit of drinking ; for without the quantity and quality of the stimulant be increased, the functions will nevertheless become torpid. Drunkenness of all kinds has a dreadful effect in anticipating the effects of old age ; by the constant irritation caused by it the system seems to be completely worn out. It certainly causes time to pace on with giant strides, chases youth from the constitution of its victim, and clothes them prematurely with the grey garniture of years. How often do we see the sunken eye, the shrivelled cheek, the feeble tottering step, and the hoary head, in men who have scarcely reached the autumn of their existence !

Another, although scarcely to be called a disease, is tremors, a regular attendant upon excesses in wine ; this decidedly proceeds from nervous irritability. Even those who are habitually temperate have a quivering in their hands next morning if they indulge overnight in a debauch ; while it lasts a person cannot hold anything without shaking, nor can he write steadily. With professed drunkards this arises to a species of palsy, affecting the whole body, and even the lips, with a sort of paralytic trembling. On awaking from sleep they frequently feel it so strongly as to feel in the cold fit of an ague, being neither able to walk steadily nor articulate distinctly. And they are sometimes taken with dreadful spasm of the leg and foot, with extreme coldness of the extremities, each muscle standing out, firm and distinct. Few that have not experienced this sensation can judge of its intensity.

Of the Viscera and Organs.—It is well known by most that these are greatly affected by all kinds of inebriating agents. We now come to speak of them, and a few of the diseases to which they are subject which are caused by these agents. The skin is apt to become jaundiced in its complexion, and feels rough and scaly. There is a disease spoken of by Dr. Darwin, under the title of *Psora ebriorum*, which is peculiar to people of this description. “Elderly people,” says he, “who have been much addicted to spirituous drinks, as beer, wine, alcohol, &c., are liable to an eruption over their bodies, which is attended with very afflicting itching, and which they probably propagate from one part of the body to another with their own nails, by scratching themselves. I have not met with many cases of this disease, which is only one of the many forms of morbid action which the skin is apt to assume. In drunkards the perspiration is generally

offensive, and has often a strong spirituous odour. Cases have been met with in claret and port drinkers in which the moisture from their bodies had a ruddy complexion, similar to that of the wine which they drank. The breath is disgustingly bad, and has always a spirituous odour. This is partly owing to the state of the stomach, which communicates the flavour of its customary contents to the respiration ; and partly, also, there can be little doubt, to the absorption of the liquor by the blood, through the medium of the lacteals.

The Eyes are affected with both an acute and chronic inflammation. Almost all drunkards have the latter more or less ; their eyes are red and watery, and have an expression so peculiar that they can never be mistaken. Next to great exertion of the eyes, nothing sooner produces ophthalmia than full living and the use of stimulating liquors, but more so when these two causes are joined together. It decidedly impairs vision : the retina is most probably affected ; and in time the tunica adnata, which covers the cornea, loses its original clearness and transparency. I quote the following passage from Dr. Copland's *Dictionary* :—“ Too full living, or the abuse of spirituous liquors, are most common causes of ophthalmic inflammation.” The nasal organs, likewise, not only become red and fiery, but acquire a general increase of size. This is the *surest* sign of a professed drunkard.

We will now enter upon the internal organs, and first the *stomach*, which is the first affected, and which generally affects all the rest. This is more subject to chronic than acute inflammation brought on by the direct excitement of the liquor ; it generally becomes indurated, and is often thickened to half an inch, or even an inch, and its different tunics so matted together that they cannot be separated. The pyloric orifice becomes, in many cases, indurated ; the cardial and cesophageal are likewise affected, but less frequently, and are much more speedily fatal. The only experiments that I am acquainted with that have been made on the stomach are those of Dr. Pilgeran, of Bavaria, during the years 1777—8. The scarcity of fodder compelled them to destroy a great number of horses ; of this he availed himself, and made a number of experiments on two hundred horses with arsenic, barytes, opium, hemlock, belladonna, distilled spirits, wine, and vinegar. After giving horses brandy so as not only to exhilarate them, but to make them stagger and drop down, he opened them, and found that it shrivelled and contracted the stomach, gave a blood-shot appearance to the intestines, and produced congestion of the brain. But the effect of vinegar, which I before remarked was a

component part of wine, was the most remarkable. Concentrated vinegar excited the most dreadful spasms, and produced fatal symptoms. They became extremely weak before death ; and in those which were killed in the extreme weakness the alimentary canal exhibited little or no irritability on pricking its fibres. That vinegar is destructive to the human stomach is known by its effects on healthy females, who, from a silly desire of looking delicate—that is, sickly—swallow daily large draughts of it. This innocent pastime *only* ruins the digestive faculty, and thereby deprives the system of its requisite nourishment. Wine makes a two-fold attack on our health ; it attacks the stomach in the form of wine, and returns to the charge in the form of vinegar. Hence, in weakly stomachs, when the ingesta are composed chiefly of vegetables, and nearly on the point of acidity, a single glass of wine will turn the whole mass into so much thick vinegar. All provocatives of the stomach—such, I mean, as to lash it into temporary excitement—are eventually injurious. It is, likewise, doubly influenced by narcotic and other stimulants : first, by the direct excitant effect of these on the stomach, and by their action on the nervous system, which again acts upon the stomach ; so that there is not only a primary but a secondary action. Indigestion or spasm may arise from a mere imperfect action of this organ, without any disease of its structure ; but when organic derangement takes place they are constant attendants. In the latter case it is extremely difficult for any food to remain on the stomach : it is speedily vomited. What little is retained undergoes a painful fermentation, which produces sickness and heartburn. There is, at the same time, much obstinacy in the bowels, and the body becomes emaciated ; the appetite is always impaired. Nothing is more conducive to health than a good appetite for breakfast ; but, from the depraved state of the stomach, there is no relish whatever for this meal.

I have before noticed how much dyspepsia is a concomitant of drunkenness, almost, I may say, a necessary attendant. When we consider how largely the digestive process ranges, and from what a wide spread of organs, closely sympathizing with one another, the disease of dyspepsia may proceed—how many, very many diseases, have their origin in it—the only wonder is how the system is able to stand against so many assailants. Bilious complaints, which were formerly unknown to the common people, are now exceedingly numerous, and proceed, in a great measure, from the indulgence in ardent spirits, to which this class of society is so much addicted. It is the opinion of many that the large quantity of rum drunk by sailors and

soldiers in hot climates is the principal cause of the fever, which carries off so many to an untimely grave ; and that it operates chiefly by causing indigestion and weakening the stomach ; undermining the constitution, which is thus little able to repel or stand against the attacks made upon it, but which, if the constitution were not thus weakened, would have sufficient power of itself to withstand the disease. The following anecdote is from Miss Seward, the well-known writer of the life of Dr. Darwin. She met with a whole family of poor children, whose pale faces and emaciated bodies forcibly attracted her attention. Upon inquiring of the mother how they were fed, she was informed that "they did not eat much, and what they did eat was not sufficient to nourish them without gin and water. It was, indeed, scanty vegetable fare !" Miss S., after stating to the woman the pernicious effects likely to follow from such a regimen, advised her to purchase a little animal food with the money she expended in gin, and to give the children water to drink with their meals. "Lord, madam !" said the woman, "if I was to do that, I should never be able to satisfy them, in these hard times. I was used to give them water ; but then they were always hungry, and I could not beg or buy victuals for them." We cannot well imagine a more impressive representation than this, both of the extent to which injury is done to the assimilating organs by the habitual use of spirits, and of the mode in which such injury is produced. The inflammation of drunkenness is, for the most part, chronic, and the viscus which, in nine cases out of ten, suffers, is the liver. Every one knows that drinking affects this organ, and it has been known that it does so from the earliest ages. The story of Prometheus stealing fire from heaven and animating clay—alluding to the effects of wine upon the human body—and the punishment of having his liver devoured by a vulture, is but a beautiful allegory which refers to the consequences which men draw upon themselves by over-indulgence ; this organ becoming thereby highly diseased.* Man is not the only animal so affected. Swine

* We find Horace, too, mentioning this in one of his most beautiful odes :

" Audax Iapeti genus
Ignem fraude malâ gentibus intulit.
Post ignem ætheria domo
Subductum, Macies, et nova Februum.
Terris incubuit cohors :
Semotique prius tarda necessitas
Ileti corripuit gradum."—*Ode 3, Book 1.*

who are fed upon the refuse of breweries have their livers enlarged in the same manner. Some fowl dealers in London are said to mix gin with the food of the birds ; by which means they are fattened, and their livers swelled to a great size. Neither malt liquors nor wine have so rapid and decided an effect upon the liver as ardent spirits. The liver is a viseus whieh, in confirmed topers, never escapes. Sometimes, by a slow chronic action, it is enlarged to double its usual size, and totally disorganized ; and yet the person suffers comparatively little. The disease frequently occurs in tropical climates, from warmth and other natural causes ; but an excess in spirituous liquors is more frequently the cause than is generally imagined. The consequences which follow chronic inflammation of the liver are very extensive, but the cause of the inflammation has not, I believe, been discovered. There are only two ways by which it can happen : first, by sympathy with the stomach, which is not at all improbable if we look at the many diseases of the stomach with whieh the liver certainly sympathises ; or through the medium of the eirculation, acting in a particular manner upon the tissue of this organ, or perhaps by both. But it would take an essay of itself to solve this problem thoroughly ; I will, therefore, merely point out the effects arising from it. The bile, in general, is not secreted in due quantity or quality ; consequently digestion is defective, the bowels, from the want of their usual stimulus, become torpid. The person gets jaundiced, his skin becoming yellow, dry, and rough, and the white of his eyes discoloured. As the enlargement goes on, the free passage of blood in the veins is impeded, and their extremities throw out lymph ; this, accumulating, forms dropsy, a disease with whieh a great proportion of drunkards are ultimately more or less affected.

During intoxication the action of the kidneys is always much increased ; and this is a favourable circumstance, as, more than anything else, it carries off the noxious properties of the ingesta. In confirmed ones, however, the kidney is apt to become permanently diseased, and secretes its accustomed fluid with unusual alacrity, not only in the moments of drunkenness, when such an increase is useful, but at all periods, even when the person abstains from every indulgence. The disease called diabetes is thus produced, whieh is mostly a fatal affection, and concerning which all practitioners seem to agree that it mostly, if not always, is the effect of intemperance. The following hypothesis of diabetes was proposed by Dr. Darwin, who conceived that when a greater quantity of inebriating fluid than usual is drunk, at the same time that the lacteals are quickened in

their power of absorbing it, the urinary branches of the absorbents, which are connected with the laeteals by many anastomoses, have their action inverted, and a large quantity of pale, unassimilated urine is hereby discharged. Where the ingurgitation of fermented or other exciting liquors is continued, or occurs often, the urinary absorbents at length gain a habit of inverted action whenever the laeteals are stimulated, and the whole or a great part of the chyle is then carried to the bladder without entering the circulation; the body becomes emaciated, the urine necessarily sweet, and of the colour of whey. I will not attempt to prove this hypothesis, which would be foolish, as it is altogether founded on postulata. I merely quote it to show the reason assigned by medical men generally for the origin of diabetes, when we see Dr. Darwin assigning as the *only* cause of it inebriating fluids, and fermented or exciting liquors. The hypothesis received at present, and which does not at all deny its being brought on by these agents, but which bears out one of my former suppositions, is this—that, owing to exhausted or deficient influence of the nerves supplying the assimilating viscera and vascular system, the chyle is not readily or perfectly changed into blood, nor are the nutritious parts of the blood attracted by, and identified with, the various structures—that this imperfect performance of the assimilating functions must necessarily be attended by deficiency of all the secretions and excretions, excepting the urinary; particularly the cutaneous, respiratory, &c., as both classes of functions are under the influence of the organic system of nerves. Thus a redundancy of imperfectly elaborated blood must be the result, a portion of which will be carried off by the kidneys, as in other circumstances; for as long as these emunctories retain their power they are the appropriate safety-valves of the vascular system, by eliminating both the watery, the saline, and other elements of the blood, when they become excessive. These states and changes account for the simple excess of urine, the more watery parts of the blood being carried off by the kidneys, instead of being secreted from the cutaneous, the respiratory, and intestinal surfaces; and the action of the kidneys being once excited in the manner now stated, become excessive from the superabundance of the imperfectly elaborated and stimulating matters contained in the blood circulating through them. Diabetes, then, may be looked upon as a result of the breaking down of the system generally, in consequence of intemperance and all illicit indulgences, and exhaustion of the vital energy, whereby several or even all the organs concerned in the perpetuation of life suffer more or less.

"A calculous diathesis," says Mason Good, "is generally produced by dyspepsia and ascidity of the *prima viae*, as I before noticed, a necessary attendant on drunkenness. In such cases," says he, "gravel must frequently attend, and is even a necessary effect." The energy of the urinary system in the inhabitants of temperate climes has been considered as the cause of the frequency of calculous affections in Holland, England, and France, while they are very rare in more southern countries, in which the cutaneous perspiration seems to be substituted, in great measure, for the urinary secretion. There is no part of the world in which cases of calculi are more frequent than in Holland, in which a cold, damp atmosphere is unfavourable to perspiration, which is, at any rate, but scanty. In no other country could a lithotomist (Raw) have operated on more than fifteen hundred patients. Diabetes, which, as I said before, depends upon excessive relaxation of the renal tissue, is of frequent occurrence only in damp and cold countries, and is unknown in warm climates. This relaxation in diabetes depends on the exhaustion of the urinary organs called into too frequent action, as is proved by the efficacy of tonics and astringents in the treatment of that complaint. If diabetes and calculi depend upon the urinary organs being preternaturally excited by the suppression only of the perspiration, how must they be excited by the introduction of a pint or more of gin (which is the strongest diuretic possible) daily into the system? Would the suppression of the diaphoresis occasion such an excitement to the system as this?—Certainly not. Can it, then, be wondered at that persons who use such strong urinary excitants should be troubled with stone, gravel, &c., and all other of those painful disorders peculiar to the urinary organs? But they do not only cause it by the excitation of the kidneys; they likewise cause it by their influence on the digestive organs, which is decidedly the most common cause of stone. Dr. Paris says that the quantity of salt taken by British seamen with their food, from its stimulating influence on the chylopoietic viscera, by correcting dyspeptic symptoms, is the cause of their comparative rarity from calculous disorders. It is to this effect on the digestive organs that he refers the antilithic properties of ale. "I am by no means disposed," says he, "to regard altogether as a popular fallacy the general opinion in favour of the antilithic properties of malt liquors. From the observation upon the bills of mortality in 1662, by an ingenious citizen, on the increase and decrease of diseases, it is observed, 'The stone and strangury decreaseth from the drinking of ale.'"

Inflammation of the brain is frequently a consequence of intemperance ; it may follow immediately after a debauch, or it may arise secondarily from an excess of irritation being applied to the body during the state of debility. Dr. Armstrong, in his lectures, speaks of a chronic inflammation of the brain and its membranes, proceeding, among other causes, from the use of wines and spirits. According to this physician, it is much more common after than before forty years, although he has seen several instances occurring in young persons. The brain becomes diseased, the diameter of its vessels becomes diminished, and while their coats are thicker and less transparent than usual, in some places they swell out and assume a varicose appearance. The organ itself has no longer the same delicate and elastic texture, being either preternaturally hard or of a morbid softness. Slight effusions in the various cavities are apt to take place. Under these circumstances there is a strong predisposition to apoplexy. To this change of structure is to be attributed the mental debasement, the loss of memory, and gradual extinction of the intellectual powers. The brains of all confirmed drunkards exhibit more or less of the above appearances. The effects produced by spirituous substances on the development of hyperemia have been considered by some writers as demonstrated. We can conceive how such an exciting cause may, by generating a greater quantity of blood in the system, favour a determination towards the head. Alcoholic drinks have, beyond all doubt, a powerful influence in the production of cerebral congestion ; and we are induced to think that these may not act only sympathetically from the stomach, but also exercise a direct influence on the brain itself. This is the more probable because, after death, the odour of alcohol has been found disseminated through the substance of that organ. Narcotics—under which head we may recognise many potations, spirituous and vinous, in common use—may have a direct influence in determining cerebral hyperemia, no matter how introduced into the economy, or under what form. We always find after death an identical lesion, consisting in a greater or less hyperemia of the nervous centres. Observe cases of poisoning produced by narcotics, and you will convince yourself that the brain must be the seat of modifications which the scalpel, indeed, does not reveal after death, but which are proved by the diversity of accidents that occur during life.

One of the most important diseases that occurs to the brain in consequence of intemperance is delirium tremens ; it frequently, but not uniformly, occurs in the advanced stages of the organic changes limited to parts of this organ. “ But in advancing this,” Dr. Copland

says, "it, as well as other cerebral affections, have been too generally imputed to inflammatory action, and the state of the ganglionic or organic nervous power, which evidently influences both the functions and circulation of the brain, entirely overlooked, particularly as respects this affection." From this, then, it is evident that he ascribes this affection to the influence of the nervous power. When a large quantity of intoxicating fluid has been suddenly taken into the stomach, the usual preliminary symptoms of drunkenness do not appear; an instantaneous stupefaction ensues, and the person is at once knocked down. This cannot be imputed to distension of the cerebral vessels, but to a sudden operation on the nervous branches of the stomach. The brain is thrown into a state of collapse, and many of its funtions suspended. In such cases the face is not at first tumid and ruddy, but pale and contracted; the pulse is likewise feeble, and the body cold and powerless. The truth of this remark has been demonstrated by the experiments of Mr. Brodie when he killed animals by injecting alcohol into the stomach. He always found on dissection that the organ displayed marks of powerful inflammatory action, and that blood was extravasated between the coats; but, except a gorged state of the vessels, no preternatural appearances were remarked in the brain: therefore, that the fatal shoek is altogether on the nervous energy cannot be doubted. Delirium sometimes occurs without any inflammation of the brain whatever, and without even a determination of blood to the head. If it oceurs not always as a concomitant of inflammation, and frequently without any inflammation, to what cause, then, are we to ascribe it? If we attentively examine the causes by which it is generated, we shall not only discover that it is produced by certain impressions on the organic nervous power, but we shall show by analogy how spirituous liquors operate: it is occasioned by excessive hæmorrhage, by inanition, profuse discharges of the fluids, old age, hysteria, fear, &c., all of which we know have no action on the brain, but upon the nervous energy. Again, it is continually observed in the advaneed stage of all exanthematous fevers, of acute inflammations, and certain chronic disorders. How do these act? Do they cause inflammation of the brain? or do they diminish the nervous power?

Let us now turn to those substanees which are generally ranked as causes of delirium tremens. We first find all narcotic or acronotic poisons, as opium, belladonna, &c.; its occurence from the exhibition of these is noticed by various writers. It has frequently followed from hyoscyamus, exhibited in clysters; it is likewise some-

times produced by *preparations of the hop*. It will be at once granted that these substances act decidedly on the nervous energy and are analogous in their action to spirituous liquors ; and we find that the delirium caused by the protracted use of these spirits is of the same kind with that occasioned by the substances above mentioned. "Spirits," says one of our most illustrious physicians, "cause the blood to circulate freer, while at the same time they exert a peculiar action on the nervous system. The nature of this action, it is probable, will never be satisfactorily explained. If mere stimulation were all that were necessary, drunkenness ought to be present in many cases where it is never met with, or, more properly speaking, its symptoms ought to exist in inflammatory fever, and after violent exercise, such as running or hard walking. Inebriating agents, therefore, with few exceptions, have a two-fold action ; they both act by increasing the circulation and influencing the nerves, and the latter operation, there is no doubt, is the more important of the two. If farther proof were required, it would be only necessary to mention the circumstance that the acetate of ammonia possesses singular properties in restoring persons from intoxication. This fact was ascertained by M. Maserer, a French chemist. According to him, twenty or thirty drops in a glass of water will, in most cases, afford relief from the sense of giddiness and oppression on the brain. Does the ammonia here act by checking the circulation, by diminishing the flow of blood to the head ? Certainly not : it acts in as different a manner as possible. By its stimulating action the nerves of the stomach regain somewhat of their nervous energy, they throw off the torpidity which has seized on them.

I set out with the intention of merely pointing out the effect of spirits as an agent in producing delirium, but I fear I have wandered from the subject. If any stress is to be laid upon authority, Dr. Copland says, "The chief cause of delirium is evidently the abuse of intoxicating, especially spirituous, liquors. Alcohol," says he, "destroys the mobility of the nervous power, whence, from its stimulant and sedative effects, compression of ideas and delirium ; and still repeated, the nervous flow is arrested, voluntary and involuntary motion destroyed ; sleep, lethargy, apoplexy, and death, are the consequences." Another cause of this disorder is an impure or altered state of the circulating fluid. It may be easily seen how ardent spirits, taken to such excess as they generally are, would alter the circulation and render the blood impure ; but of this I shall speak when I treat of their effects on the blood.

But there are other disorders arising from the action of spirituous liquors on the brain. I will first revert to vertigo, which seems to be in consequence of a close sympathy between the brain and nerves of the stomach ; for whatever affects the latter organ, or any other viscus strongly sympathising with it, may bring it on equally with inebriating agents. Staggering and stammering are, in like manner, to be explained from the disordered state of the nervous system. When the organ of sensation is affected, it is impossible that parts whose actions depend upon it can perform their functions properly. For example, there is evidently a loss of power in the lingual nerves which give action to the tongue. But a more grievous and far more dreadful disease arises from this practice : I speak of insanity, the worst disease which can possibly attack the human frame, when the mind is obliterated, and the man stands upon the face of the creation more helpless than the brute. Intoxication may affect the mind in two ways ; a person, after excessive drinking, may be seized with delirium, and run into a state of violent outrage and madness. In this case the disease comes on suddenly. Some never get drunk without being instantly outrageous ; they attack all who come in their way, foam at the mouth, and lose all sense of danger. This fit either goes off in a few hours or degenerates into a confirmed attack of lunaey. More generally, however, the madness of intoxication is of another character, partaking of the nature of idiotism, into which state the mind revolves itself in consequence of a long-continued falling off in the intellectual powers. When we read of Alexander the Great killing his friend and benefactor in his cups, and setting fire to a palace and all the illustrious monuments of the Persian kings, we are almost unwilling to receive the story, because we are at a loss to find a cause. "But I have witnessed," says Dr. Monro, "many instances of temporary insanity produced by drinking, ay, by even one night's debauch. From one of these self-created manias—an intimate friend too—I had a very narrow escape of my life. He entered my barrack-room with a drawn sabre, fresh ground, when I hid myself under the bed-clothes. His amusement was to exhibit his skill in the cuts of five and six at my head, which was, fortunately, protected by thick blankets. What he was thinking of, unless Bedlam, I am unable to divine ; but his reiterated exclamation was, 'Mind your eyes, Dr. Monro !'"* By the Indians, drunkenness is looked

* "O ! thou invisible spirit of wine, if thou hadst no name to be known by let us call thee—Devil. * * * O ! that men should put an enemy in their mouths to steal away their brains."—*Othello*, act iii., scene 3.

upon as a species of madness ; and in their language the word *Ram-gam*, signifying a drunkard, signifies also a madman. Drunkenness, according to the reports of Bethlem Hospital and other similar institutions for the insane, is one of the most common causes of lunacy. " It is a well-known and salutary maxim in our laws that crime committed under the influence of intoxication does not exclude the perpetrator from punishment ; but it must also be recollectcd that habitual drunkenness may induce a state of mind akin to insanity : it is, in fact, one of the most common causes of this disease. The partition line between intoxication and insanity may hence sometimes become a subject of discussion."*

Intemperance, or a too free indulgence in spirituous or malt liquors, is both a predisposing and exciting cause of apoplexy ; and numerous instances of its ill effects are adduced by Bonct, Morgagni, Mcad, Fothergill, and other illustrious writers. Oppression and distension of the stomach prevent the descent of the diaphragm, impede the dilation of the cavities of the heart, obstruct the circulation through the lungs and the return of blood from the head ; whilst the vital energy is abstracted from the brain by the influence of the ingesta on the gangliac system. Owing to these effects, the vessels of the encephalon are engorged at a time when the vital energies are diminished ; while the rapid influx of the fluid matters into the system as the process of digestion advances tends to heighten the vascular fulness and disposition to effusion. But the use of these liquors produces apoplexy in two different ways : malt liquors are a predisposing, while spirituous are an exciting, cause. To the use of the former generally succeeds the sanguineous or congestive apoplexy ; but the latter act more upon the vital endowments of the brain, giving rise to asthenic or nervous apoplexy, which arises from depression, exhaustion, or abolition of the vital influence bestowed upon the encephalic organs. That it does frequently arise from nervous exhaustion may be gathered from the fact that it is produced by narcotics, but more especially the different species of monkshood, which invariably produces asthenic apoplexy.

Drunkenness may likewise bring on epilepsy. Many persons cannot get even slightly intoxicated without having an epileptic or other convulsive attack. The blood of a professed drunkard differs from that of a sober man ; it is more dark and approaches to the character of venous, and is evidently much contaminated. The direct influence

* Beck's *Medical Jurisprudence*.

of the nervous system on the blood was long since contended for by Barthez, and admitted by several physiologists; the chief error, or rather fallacy, in their theory, however, being that this influence was imputed to the cerebro-spinal nerves, and not to the ganglionic and respiratory nerves, to which it almost entirely belongs. Since the promulgation of this opinion, many years ago, numerous proofs of the accuracy of this view have been furnished. It was proved by Dr. Mayo's experiments, that, when the pneumo-gastric nerves are tied, the blood coagulates in all the pulmonary vessels, the colouring matter separating from the fibrin; and that this change was not in consequence of death, but its antecedent, since it was uniformly found on opening the bodies the moment they expired. Thus we see the operation of the nervous power. I before explained in what way spirituous liquors act on the nervous ganglia; and there is no doubt that there are many cases in which persons die from spirituous liquors, where the effect is such that the action of the pneumo-gastric nerves is suspended, and that thus life is destroyed. I likewise stated that by the ingesta of a large quantity of spirits the nervous system was suspended: by keeping this in mind the truth of the foregoing remarks will be at once seen. "It is conceivable," says Richerand, "that the muscular irritability may be so far impaired by the use of spirituous liquors that the heart and diaphragm might lose their power of contraction, which would bring on complete asphyxia." The heart is excited by all stimulants acting on the brain, but much more so by spirit of wine than any other stimulant, or even mechanical irritation.

The chyle, which is necessarily affected by the various kinds of food which we use, has different appearances in the same persons, varying according to the quality of the different kinds of food on which we feed. Indigo gives it a blue colour; it is reddened by madder and beet root, and is changed to green from the colouring matter of several vegetables. This fact, without further comment, at once proves the contamination of the blood—for what is blood but chyle? Most persons addicted to dram drinking eat little or no food. It must be evident, then, that the blood must be mostly composed of these fiery substances; nor can it thus but be an excitant and irritant to the whole frame. Nor is the supposition very great that a person long continuing this practice may be so replete with alcoholic and terebinthinate principles that he may be spontaneously consumed by the approach to a fire. This death, almost too dreadful to think of for a moment, does, however, sometimes occur. Of this extraordinary occurrence twenty well-authenticated cases are upon record, one of

which came under the observation of Dupuytren. It happens in all countries, and it generally results from the use of spirituous liquors. It is commonly produced by the near approach of some ignited substance, but it does not appear that immediate contact is necessary for its generation. Upon the moment of the attack a little bluish flame is seen to spread itself over the whole body with extreme rapidity, or only to play about on a few parts. Water fails to extinguish it, a most detestable odour fills the apartment, and a thick black smoke rises from the carcase and settles on the surface of the furniture in the form of soot, unctuous to the touch, and of insupportable fetidity. In many cases the combustion ceases only when the muscles are reduced to ashes and the bones have crumbled into dust. If so, a pulvrenulent mass is seen on the floor, so small that it seems impossible it could ever have been an entire human body. All this may be effected in an hour and a half; but the cause of this phenomena is yet undecided. The general opinion, however, is that, from the great quantity of alcohol absorbed, the system reaches at length a period of saturation; and when tegumentary exhalation is no longer in proportion to internal absorption, the different systems of the economy, being thus impregnated, are easily consumed. Larrey and others suppose that there is an alcoholic impregnation of the body, and that actual contact with fire is necessary to produce it; while Maffei, Le Cat, Kopp, and Marc, attribute this to the agency of electric fluid. That the former of these is most likely to be correct, I think there is no doubt; in proof of which it may be adduced that no one, except reputed drunkards, have as yet been known to suffer from this dreadful death. A valuable paper was published by a Mr. Mitchell in the *American Medical Recorder*, in which the author supports, in a very ingenious manner, the opinion that combustible gases are generated in the system of drunkards by the decomposition of the alcohol which is continually drunk. Whether such a quantity of hydrogen may accumulate in the bodies of drunkards as to sustain combustion, is not easy to determine. This subject is, indeed, one which has never been satisfactorily investigated. When we consider that writers like D'Azyr, Le Cat, Maffei, Jacobæus, Rolli, Bianchini, and Mason Good, have given their testimony in favour of such facts, it requires some effort to believe them unfounded. In truth, I cannot quit this subject, dreadful as it is, without giving the undermentioned fact, exactly as it appeared in one of the London papers. "Captain Lerrey, of Cherbourg, was found dead in his bed on the morning of the 27th of October, 1836, with the flesh on his breast and throat, and

both his arms burnt away to the bone. When he went to bed a bottle of strong brandy was placed by his side, of which only about one-eighth remained. The medical men, on examination, ascertained he had died of apoplexy, and that his flesh had been consumed by spontaneous human combustion ; for although the bed-clothes were slightly burnt from the communication of the candle, the fire from them had evidently been insufficient to produce the consequences. It is probable they arose from the flames having caught the alcoholized vapour that issued from the captain's body."

Drunkenness has decidedly a more deplorable effect upon posterity than any other practice ; for it entails not only bodily disease upon the innocent offspring, but also the more afflicting diseases of the mind. It is likewise remarkable that all the diseases arising from drinking spirituous or fermented liquors are liable to become hereditary, even to the third generation, gradually increasing, if the cause be continued, till the family become extinct. Women, especially in a low station, who act as nurses, are strongly addicted to the practice of drinking porter, ale, &c., for the purpose of augmenting their milk. This very common custom cannot be sufficiently denounced. The milk, which ought to be bland and unirritating, acquires certain heating qualities, and becomes deteriorated to a great degree. The child nursed by a drunkard is never healthy ; it is, in a particular manner, subject to derangements of the digestive organs and convulsive affections. The best informed physicians condemn the practice of giving wine daily to children. The following well-conceived experiment is proof positive of its injurious effects. "A physician of great eminence in London gave to one of his children a full glass of sherry every day after dinner for a week ; the child was about five years old, and had never been accustomed to wine. To another child, nearly of the same age, and under similar circumstances, he gave a large China orange for the same space of time. At the end of the week he found a very material difference in the pulse, the heat of the body, the urine, and stools, of the two children. In the first the pulse was quickened, the heat increased, the urine high-coloured, and the stools destitute of their usual quantity of bile ; while the second had every appearance that indicated high health. He then reversed the experiments ; to the first mentioned child he gave the orange, to the other the wine : the effects followed as before."*

Let us consider for a moment the stimulating or exciting powers

* R. J. Thornton's *Philosophy of Medicine*.

of wine. When a depressed man is insufficiently excited by the natural stimuli, and rises not, suppose, above thirty degrees in his excitement, a glass carries him up to thirty-two degrees, another to thirty-four degrees, and so on to forty; he then finds himself well and vigorous in all his functions. But still we are not so flimsily made as not to bear a little more or less than the proper quantity. Suppose he then takes five glasses more, and consequently is raised to fifty degrees. As his spirits, his intellectual, and all his other functions, were low while his excitement remained at forty degrees, so they are proportionately excited by the time that his excitement is raised to fifty degrees. Let him still go on, and his intellectual functions will rise still higher; he will now display the full extent of his genius, and his passions and emotions, of whatever kind they be. If he goes on, how will the appearance be reversed! The hero soon sinks into a mere brute; he falls off in both his intellectual and corporeal functions; his tongue, his feet, his eyes, his memory, all fail; and at last, deprived of all power of motion and sense, he sinks into an inanimate sleep. Although man, destined to live in all latitudes, is found to subsist on all kinds of food, it has been observed that the inhabitants of warm climates generally prefer a milder regimen, and are not so addicted to stimuli of any kind as more northern nations. The Brahmins in India, the inhabitants of the Canary Isles and of the Brazils, &c., who live almost exclusively on vegetables and aqueous drinks, inhabit a climate against the excess of which they have to seek means of protection, and they find that a light regimen is attended with less heat and irritation. The law of Mahomet, which forbids the drinking of wine, is a law fitted to the climate of Arabia, and, indeed, before Mahomet's time water was the common drink of the Arabs. The philosophical or religious sects by which the abstinence from animal food and all kinds of wine, &c., was considered as a meritorious act, were all instituted in warm climates; in these sobriety is an easy virtue. In hot climates, likewise, where man is subjected to the continued operation of a high temperature, which excites the nervous functions and vascular action, notwithstanding the provision with which nature has furnished his integuments, in order to moderate the animal heat, their food should be chiefly vegetable, and their drink as unirritating as possible. It may be laid down as a maxim that, in these regions, wine and ardent spirits are invariably hurtful, not only in immediately heating the body, but the aqueous part of the blood loses itself greatly by perspiration. A great portion of the deaths which occur among Europeans in the tropics are

brought on by excess. Instead of suiting their regimen to the climate, they persist in the habits of their own country, without reflecting that what is comparatively harmless in one region is most destructive in another. Northern nations, on the contrary, are obliged, from necessity, incessantly to struggle against the action of cold, which tends to benumb the vital powers, to suspend every organic motion : their life is but a continual act of resistance to external influence. Let us not reproach them with voracity, and their avidity for ardent spirits and fermented liquors. Their ordinary use of food so acrid and heating that in our climate it would inevitably be attended with a febrile action, proves plainly the necessity of balancing by a vigorous inward excitement the debilitating influence of powers that are operating from without. The abuse of spirituous liquors is fatal to the European transported to the burning climate of the East Indies, while the Russian drinks them with a sort of impunity, and lives on to an advanced age amidst excesses under which an inhabitant of the south of Europe would sink. And to prove that this excess has no demoralizing influence on them it is only necessary to mention that females of the more northern latitudes, although living on heating food and indulging in excesses in drinking, are more virtuous and prolific than the women of more southern climates ; moreover, that the mean duration of life is longer in both species. The influence of climate affects alike the regimen of man in health and that of man in sickness. Barley, ptisan, honey, and a few other substances, sufficed Hippocrates in his therapeutic treatment, which was, almost in every case, soothing and refreshing. Physicians practising in such a place as Greece might follow this simplicity. Opium, bark, spirits, aromatics, &c., and the most active cordials, are, on the other hand, the medicines suited to the inhabitants of the north. The English physicians use freely and without risk those medicines which elsewhere would be attended with the greatest danger. From this, I think, we may pretty clearly understand that the regimen should be invariably suited to the climate. If this is the case, it will be evident that in such a climate as that of England—a climate in which a genial warmth is quickly succeeded by the most intense cold, where so many vicissitudes occur, and to which all our labouring men are subject—something is required to resist this ; and although we stand not in need of such heating food and ardent spirits as the Kamschatkale, yet still we do require a more generous diet than the vegetables and water of the Brahmins. Man is a compound of matter, so formed as to be capable of being acted upon by various

stimuli necessary to the continuance of life ; and immediately upon his birth the first stimulus he receives is a quantity of atmospheric air in the lungs. This, with the addition of some milk or mild food taken into the stomach, is all the stimulus he seems capable of bearing at this period, consistent with life. The external senses cannot endure any strong action on them ; hence, the tympanum is kindly covered, for some time after birth, with a thick mucus, occasioning deafness, and the eyes are shut against, or turn from, the impression of strong light. In this state there is the keenest irritability from day to day ; the irritability of the fibre gets diminished, as is known to us by the circumstance of the same stimulants having less effect on the fibre in proportion as we advance from infancy to puberty, and from puberty to manhood. At this period of life—namely, about thirty-five years of age—it appears that there exists, as it were, a just equilibrium between the powers of the ordinary stimulants and the irritability of the muscular fibre ; yet, at the same time, as the continued application of the ordinary stimuli is absolutely necessary to life and health, so the daily effects of these is a small degree of exhaustion and irritability, restored nearly by periodical sleep. But, again, according to the organization of our bodies, though sleep restores the healthy state of irritability in a certain degree, yet it seems never to restore actually the former state : a small degree of exhaustion and irritability takes place every year. This gradual change, consequently, not only indicates the power of bearing, but also the necessity of the application of stronger stimuli, hence verifying the adage that “Milk is the food of infants, and wine of old age.” No man was better acquainted with the means by which the evils of old age may be driven off than Homer, and he makes Ulysses prescribe generous wine to his father Laertes, among many other good things. And there is much reason in this : old age may be compared to a heavy burden at the end of a long journey, and it is then that both the body and the mind require support, like a jaded horse. The vigour of the spirit is wanted as that of the body declines, and an extra glass of wine is never thrown away upon an old man. Pitt said of wine, to justify the high tax he put upon it, “Young men *will* have it, and old men *must* have it.” The most numerous tribe of disorders incident to advanced life spring from the failures or errors of the stomach and its dependencies ; and perhaps the first source of all the diseases of senility may be traced to effects arising from imperfectly digested food. In old age the bowels are also liable to an increasing

torpor. Sir A. Carlisle says that in this condition of the system wines are often beneficial ; they seem, when congenial, to invigorate the heart, to augment the bodily temperature, and to improve the nervous and sensorial powers : they are diffusible and temporary stimulants. In most cases of debility suitable wines appear to strengthen digestion. The intimate connexion between the health of the stomach and the circulation of the blood renders wine allowable when the vascular system is habitually weak. "It may be remarked," says Sir Gilbert Blane, "that abstinence is not favourable to longevity. I found, on making enquiries in Catholie countries, that the monastic orders who practised an ascetic life did not, in general, attain to an advanced age ; so true is it," says he, "as a maxim in human life and conduct, physical and moral, that what is most commendable and expedient consists in the observance of a medium in all things." "Ut ne quid nimis" (not too much of a good thing), as Terence says. Although drunkenness is *always* injurious, it does not follow that a *moderate and proper use* of those agents which produce it should be so. It is impossible to deny that in particular situations, as in those of hard-wrought soldiers and sailors, a moderate allowance is proper ; the body, in such cases, would sink under the accumulation of fatigue and cold, if not recruited by some artificial excitement. There are particular situations and circumstances in which a man can stand liquor better than in others. In the close atmosphere of a large town he is soon overpowered ; in the country, especially in a mountainous district or on the sea-shore, where the air is cold and piercing, a great quantity may be taken with impunity. The Highlanders drink largely of ardent spirits, and they are often intoxicated, yet among them there are comparatively few who can be called habitual drunkards. A keen air seems to deaden its effects, and it soon evaporates from their constitutions. Sailors and soldiers who are hard-wrought also consume enormous quantities without injury ; porters, and all sorts of labourers, do the same. With these men exercise is a corrective, but in towns where no counteracting agency is employed it acts with irresistible power upon the frame, and soon proves destructive. It follows that if spirits are often perverted to the worst purposes, and capable of producing the greatest calamities, they are also, on particular occasions, of unquestionable benefit. In many affections both they and wine are of more use than any medicine the physician can administer. Wine is indicated in various cases of debility ; in diarrhoea, dysentery, cholera, cramps, tremors, and

many other diseases, both spirits and wine often tell with admirable effect, while they are contra-indicated, in all inflammatory affections.

Malt liquors, also, when used in moderation, are often beneficial; they abound in nourishment, and are well adapted to the labouring man. I fully agree with Sir John Sinclair in thinking that in no respect is the alteration of diet more injurious than in substituting ardent spirits for ale—the ancient drink of the common people. It differs from wine in many essential points: it contains a much smaller proportion of spirit and a much larger proportion of nutritive matter, and a certain bitter principle derived from the hop. It would appear that the extractive matter furnished by the malt is highly nutritive; and we accordingly find that those persons addicted to such potations are, in general, fat and strong. This fact is so generally admitted by all those who are skilled in the art of training that a quantity is taken, at every meal, by the pugilist, who is endeavouring to screw himself to his fullest strength. Jackson, the celebrated trainer, affirms if any person accustomed to drink wine would but try malt liquor for a month, he would find himself so much the better for it that he would soon take to the one and abandon the other. When indulged in to any extent without a corresponding degree of exercise, they induce a plethoric state of the body and all the diseases consequent upon such a condition. Bitter extractive seems to be as essential to the digestion of herbivorous as salt is to carnivorous animals: it acts as a natural stimulus. No cattle will thrive upon grasses that do not contain a portion of this vegetable principle. We are ourselves conscious of the invigorating effects of the hop in counteracting the indirect debility which ale otherwise would occasion, and even to render it, when taken in moderation, a promoter of digestion. For young and middle-aged men in good circumstances and vigorous health water is the best drink, the food they eat being sufficiently nutritious and stimulating without any assistance from liquor. For young people, in particular, liquors of all kinds are, under common circumstances, not only unnecessary, but exceedingly pernicious, even in what the world denominates moderate quantities. This is especially the case when the habit is daily indulged in.* One of the first physicians in Ireland has published

* To shew how prevalent drunkenness is with us, I just mention the following anecdote, as it appeared lately in a periodical publication. "If a person accidentally becomes intoxicated by eating a few mushrooms of a particular kind a general alarm is excited, and he is said to be poisoned; but so

his conviction, on the result of twenty years observation, that were ten young men, on their twenty-first birth-day, to begin to drink one glass of ardent spirits, or a pint of port wine or sherry, and were they to drink this supposed moderate quantity of strong liquor daily, the lives of eight out of the ten would be abridged by twelve or fifteen years.

I have endeavoured to show the superior properties of malt liquors over spirituous ones, but still they themselves contain a quantity of spirit; but it is what I before called combined spirit, and which is not in the least injurious to the human frame. They are, when pure, something like the Oenus, or wine, of the ancients, which the Apostle Paul recommends, which was a very different wine to that now used. It was the pure juice of the grape, rendered active by fermentation; for they were totally ignorant of ardent spirits. Whereas our wines contain a fourth part of this fiery spirit, while many of them are but a mixture of adulterous articles. Gibbon calls wine "a salutary but dangerous beverage." Who can deny one fact, that the bounties of the Almighty reach not merely to our life but to our enjoyments, not to the bread of sufficiency, but to a participation of numerous gratifications, limited only by moderation? We have the book of truth, indeed, for our authority, the marriage-feast in Cana of Galilee standing foremost. I need not say more of it; it is upon record, and speaks for itself.

Sir H. Davy thus writes:—"A half-pint of wine, for young men in perfect health, is enough; and," says he, "I do not deny that both the body and mind of man may be more or less benefitted by a moderate portion of good wine at any period of life, and that wine was intended for our use, enjoyment, and benefit as well. No man drinks wine merely to allay his thirst; it was intended for a loftier indulgence of nature."

That there are mental excitants, and narcotics, and tonics, there is not the least doubt. Music acts upon the mind: first, as an excitant, it rouses the attention; but the repetition of the impression at length exhausts in the same manner as follows the repetition of any series of stimulant impressions of the same kind, and sleep is induced. Not otherwise do wines operate: they at first, like music, excite the mind, rouse up all our dormant feelings and sensibilities, and produce a state of activity of the mind and repose of body, while

familiar are we with the intoxication from vinous spirits that it occasions merriment rather than alarm.

it raises the former far above its natural state. And it is in this state that the finest out-pourings of the soul take place ; to this we are indebted for many of our most eminent poets, and, I may say, most of the literary productions of which England is justly proud. Thus it is that wine acts when taken in a moderate quantity, according to the age and constitution of the person ; nor does it, when thus taken, afterwards depress the mind, making it a prey to melancholy and the most depressing passions, which a larger quantity is accustomed to produce. It is in this sense that our poet Armstrong exclaims,

“We curse not wine ; the vile excess we blame.”

Even spirits, when used in moderation, cannot be looked upon as pernicious, nay, in certain cases, even in health, they are beneficial and necessary. In countries subject to intermittents, it is very well known that those who indulge moderately in spirits are much less subject to these diseases than the strictly abstinent. At Walcheren it was remarked that those officers and soldiers who took schnaps—*alias*, drams—in the morning, and smoked, escaped the fever which was so destructive to the British troops ; and the natives generally insisted upon doing so before going out in the morning. Water is unquestionably the natural drink of man ; but, in the existing condition of things, we are no longer in a state of nature, and cases, consequently, often occur wherein we must depart from her original principles. There are many persons who find a moderate use of spirits necessary to their health. Simple aqueous drinks promote digestion by facilitating the solution of the solids, by serving as a vehicle to their divided parts, and, when rendered active by saline or other substances, they are further useful in stimulating the organs and exciting their action. The least compound drinks are possessed, in different degrees, of this double property of dissolving solid aliments and of stimulating the digestive organs. The purest water is rendered stimulating by the air, which it contains in different proportions ; and to the want of this stimulating property is to be attributed the difficult digestion of distilled waters. Thus, then, it seems that water is unquestionably the natural drink of man, and is of itself sufficiently stimulating to organs little weakened by improper or stimulating food ; but in the existing condition of things we are no longer in a state of nature. Our digestive organs and excretory ducts are greatly weakened by the aliment which we take, and our modes of life certainly require a greater stimuli to enable them to carry on their

functions ; cases, consequently, are numerous wherein we must depart from her original principles. It has been urged by many, in favour of water, that the New Zealanders—the only persons who do not manufacture some inebriating beverage—are strong and healthy, and much surpass the Europeans and other civilized nations in strength and vigour of frame. But their manner of life has not been taken into consideration : they neither cook their meat in the same manner as we do, nor do they use spices, pickles, and other condiments, which not only heat the stomach, but generally so stimulate the appetite that more is taken than what is necessary, and so the stomach is overloaded and clogged with food, whereby it becomes weakened. Nor have they the cares and anxieties which so press upon man in civilized life, than which nothing more tends to weaken the digestive organs. Were we to live in a natural state we should not require wines or spirits, they would act upon us then more as strong poisons ; but as it is, it cannot be for a moment doubted that we do certainly require a *something* of which the savages who are brought forward as an example to us stand not in need. Were any thing requisite to prove the powers of wine in giving a mental tonicity in disease, it would be only necessary to refer to its influence in sustaining the body under fatigue which could not otherwise be borne. We all know what an advantage such a tonicity of the mind gives in disease, especially in hypochondriasis, &c. How valuable, then, is that medicine by which we can insure such an effect ! As a tonic power its influence might be illustrated by a thousand examples ; to it the empiric owes the few cures which he blazons forth as the recommendation of his nostrum. But although it is the prop of the impostor, yet, like the dew of heaven, which falls equally on the just and the unjust, it is not the less valuable when properly applied by the scientific practitioner.

I have tried to demonstrate the importance of wine as a remedial agent : in deciding upon its employment, however, three things must be attended to. 1st. The choice of the wine is of the greatest importance ; for although all necessarily possess the same kind of powers, yet these differ in degree ; and it must be borne in mind whether it is intended to produce a tonic, sedative, or excitant effect. 2nd. The quantity : it is important to regulate this, in order to meet the demand which is required, or not to exceed the impression which can be sustained. If it be inadequate to the effect anticipated, the therapeutic indication will remain unfulfilled, and disappointment will necessarily ensue. If it be too great, instead of giving tone to the

system, excitement and collapse will be the result. As a proof that some agent of this kind is required to restore vigour to the exhausted frame, it may be mentioned that the only human beings on the face of the globe who do not manufacture a liquor of this kind are the New Zealanders. The Swiss peasant chears himself, amidst the solitude of his glaciers, with a spirit distilled from gentian, the extreme bitterness of which is relished with a glee that is quite unintelligible to an uncultivated taste. In all countries, in all nations, however rude, however barbarous, from, I may say, the beginning of the world up to the present time, spirits, or some excitant principle of some kind, have been used; but in *all*, for want of *due moderation*, of due care, evil consequences have been the result: but this is no reason why good ones should not have been produced likewise.

I have, in a degree, pointed out their influence upon health; and I now come to the last part of the question—"whether any quantity, of any kind, is necessary for persons engaged in laborious occupations." This I have exemplified, here and there, in several parts of this Essay. In speaking of climate, I pointed out that, although we stood not in need of ardent spirits—these I gave to the inhabitants of more northerly countries—neither could we live upon the milk-and-water-diet of those nations situated around the equinoctial line. I likewise endeavoured to show that nature had given to each country the means of subsistence best suited to it. What kind of agent, then, does England require better than that beverage which it has always used from its most remote antiquity, that which was the favourite drink of our Saxon ancestors, that which is the natural drink of Englishmen? I am speaking of malt liquors, to which foreigners have given the name of "Vinum Anglicorum." This seems suited to us in every respect, especially if made without those additions of narcotics, &c., to which lately they have been so subject. To prove this, I think, there has been quite enough said: I will conclude with the result of some experiments, lately made by myself, to try to prove this question.

To four *colliers*, at the latter end of the summer, I gave, instead of their usual quantity of beer, a certain quantity of spirits, with water. The first day they thought they worked better, but on the succeeding days, when the novelty of the thing had worn off, they did not work so well; and at the end of the week they voluntarily gave it up, declaring that they could not work near so well, that they were sooner fatigued, and towards night felt almost dead. I then tried ale—I should have before, however, noticed that the beer they

use is what they call small (and small enough it is, too), and possesses just stimulating matter sufficient to assuage their thirst, and make them feel refreshed—with this they worked better *for a while*, but at last confessed they could not work so well with it as with their own beer. Three or four others I persuaded to drink water: but this would not do at all. They complained that they did not feel at all refreshed after it; and, drink as much as they would, it did not allay their thirst, there being nothing sufficiently stimulating in it to stimulate the salivary glands. But with a labourer, working in all weathers, and exposed to all its inclemencies, the case was changed. He could not work on any quantity or quality of spirituous liquors; he was lazy, and inclined to leave his work: but he was worse on water, or even small beer. Indeed, he said if he were to live on these for a week he should be laid up; that he had tried it, but it would not do, he always felt cold and unfit for work; that some sores which he had on his legs always broke out afresh; and that he caught cold if exposed to the least inclemency of the weather. From these experiments, may we not adduce the facts that a person in a laborious occupation does require something more stimulating than water to excite the salivary glands, and cause a slight excitant impression on the stomach, and by it on the nervous system? that in colliers inclosed in a small place, with scarce room to breathe, and perspiring profusely, small beer is all that is required? but in the labouring man exposed to the inclemencies of the weather, and which, I before stated, prevented, in a great measure, the action of any sedative agent on the nervous system, by the constant excitement it keeps up on the surface, a stronger and more powerful excitant was necessary?

Having stated thus much, it is not to be inferred that I advocate the banishment of all liquors from society: I would wish to inculcate moderation. Abstainedly considerd, liquors are not injurious, it is their abuse which makes them so; in the same manner as the most wholesome food becomes pernicious when taken to an improper excess. One thing, however, is certain, that a man who addicts himself to intemperance can never be said to be sound in mind or body. The former is in a state of partial insanity while the effects of the liquor remain, and the latter is always more or less diseased in its action.

FINIS.

